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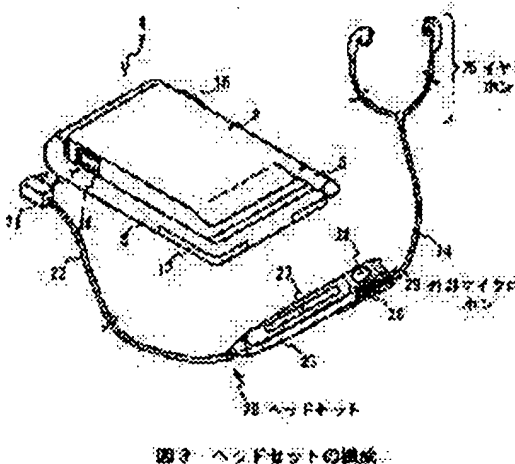
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(54) PORTABLE RADIO TERMINAL, SOUND SENDING-OUT METHOD AND SOUND TAKING-IN METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To improve facility of a portable radio terminal.

SOLUTION: This portable radio terminal is equipped with a signal sending- out means 49 which sends out an acoustic signal to a speaker 6 or sends out the acoustic signal to an earphone 25 from an earphone jack 16 via a plug 21, and control means 40 for controlling the signal sending-out means 40 in such a manner that an arbitrary acoustic signal or other acoustic signal is sent out at an arbitrary timing to an indicated speaker 6 and/or earphone 25, when the arbitrary acoustic signal is sent out to a speaker 6 and/or an earphone 25. When the acoustic signal is sent out to a speaker 6 and/or an earphone 25, the acoustic signal can be sent out to the arbitrarily selected desirable speaker 6 and/or earphone 25 by exchange without pulling out the plug 21 from the earphone jack 16. Thus, facility of the portable radio terminal 1 can be improved.



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CLAIMS

[Claim(s)]

[Claim 1] The earphone jack in which the plug connected to the loudspeaker which carries out sound emission of the sound based on a predetermined acoustic signal, and the earphone which carries out sound emission of the above-mentioned sound based on the above-mentioned acoustic signal is inserted possible [extraction and insertion], A signal sending-out means to send out the above-mentioned acoustic signal to the above-mentioned loudspeaker, or to send out the above-mentioned acoustic signal to the above-mentioned earphone through the above-mentioned plug from the above-mentioned earphone jack, the above-mentioned loudspeaker -- and -- or, when having sent out the above-mentioned acoustic signal of arbitration to the above-mentioned earphone the above-mentioned loudspeaker boiled and specified -- and -- or the pocket mold wireless terminal characterized by having the control means which controls the above-mentioned signal sending-out means to send out the acoustic signal or other above-mentioned acoustic signals of the above-mentioned arbitration to the above-mentioned earphone to the timing of arbitration.

[Claim 2] While transmitting the transmitting sound signal of a user's voice to a message as the above-mentioned acoustic signal It has a transceiver means to receive the receiving sound signal of a partner's voice, and a playback means to reproduce the music signal concerned from the predetermined record medium with which the music signal was recorded as the above-mentioned acoustic signal. The above-mentioned control means If there is arrival of the mail when having sent out the above-mentioned music signal reproduced from the above-mentioned record medium with the above-mentioned playback means to the above-mentioned earphone through the above-mentioned signal sending-out means The pocket mold wireless terminal according to claim 1 characterized by controlling the signal sending-out means concerned to send out the above-mentioned receiving sound signal received with the above-mentioned transceiver means through the above-mentioned signal sending-out means only to the above-mentioned loudspeaker and the above-mentioned earphone, or the loudspeaker concerned.

[Claim 3] It has a sending-out assignment means for inputting the sending-out assignment instruction which specifies the above-mentioned loudspeaker which should send out the above-mentioned receiving sound signal, and the above-mentioned earphone. The above-mentioned control means the above-mentioned loudspeaker -- and -- or, if the above-mentioned sending-out assignment instruction is inputted through the above-mentioned sending-out assignment means when having sent out the above-mentioned receiving sound signal or the above-mentioned music signal to the above-mentioned earphone the above-mentioned earphone according to the sending-out assignment instruction concerned -- and -- or the pocket mold wireless terminal according to claim 2 characterized by controlling the above-mentioned signal sending-out means to send out the above-mentioned receiving sound signal or the above-mentioned music signal to the above-mentioned loudspeaker.

[Claim 4] The above-mentioned transmitting sound signal which collects the above-mentioned user's above-mentioned voice with the body microphone which collects a user's voice, and the above-mentioned body microphone, and is acquired is incorporated. Or it has a signal taking-in means to incorporate the above-mentioned transmitting sound signal which collects the above-mentioned user's

above-mentioned voice with the external microphone connected to the above-mentioned plug inserted in the above-mentioned earphone jack with the above-mentioned earphone, and is acquired. If the above-mentioned control means has arrival of the mail when having sent out the above-mentioned music signal reproduced from the above-mentioned record medium with the above-mentioned playback means to the above-mentioned earphone through the above-mentioned signal sending-out means the above-mentioned body microphone of arbitration -- and -- or the pocket mold wireless terminal according to claim 3 characterized by controlling the above-mentioned signal taking-in means to incorporate the above-mentioned transmitting sound signal which collects the above-mentioned user's above-mentioned voice with the above-mentioned external microphone, and is acquired.

[Claim 5] It has a taking-in assignment means for inputting the taking-in assignment instruction which specifies the above-mentioned body microphone and the above-mentioned external microphone which should collect the above-mentioned user's above-mentioned voice. The above-mentioned control means the above-mentioned signal taking-in means -- the above-mentioned body microphone -- and -- or, if the above-mentioned taking-in assignment instruction is inputted through the above-mentioned taking-in assignment means when having incorporated the above-mentioned transmitting sound signal from the above-mentioned external microphone the above-mentioned body microphone according to the taking-in assignment instruction concerned -- and -- or the pocket mold wireless terminal according to claim 4 characterized by controlling the above-mentioned signal taking-in means to incorporate the above-mentioned transmitting sound signal from the above-mentioned external microphone.

[Claim 6] In the pocket mold wireless terminal which receives the receiving sound signal of a partner's voice while transmitting the transmitting sound signal of a user's voice to a message The earphone jack in which the plug connected to the body microphone which collects the above-mentioned user's above-mentioned voice, and the external microphone which collects the above-mentioned user's above-mentioned voice is inserted possible [extraction and insertion], A signal taking-in means to incorporate the above-mentioned transmitting sound signal which collects the above-mentioned user's above-mentioned voice with the above-mentioned body microphone, and is acquired, or to incorporate the above-mentioned transmitting sound signal which collects the above-mentioned user's above-mentioned voice by the above-mentioned earphone, and is acquired, When the above-mentioned plug is inserted in the above-mentioned earphone jack, the above-mentioned body microphone of arbitration -- and -- or the pocket mold wireless terminal characterized by having the control means which controls the above-mentioned signal taking-in means to incorporate the above-mentioned transmitting sound signal which collects the above-mentioned user's above-mentioned voice with the above-mentioned external microphone, and is acquired.

[Claim 7] The above-mentioned acoustic signal or the above-mentioned receiving sound signal is transmitted to the loudspeaker to which sound emission of the sound based on a predetermined acoustic signal is carried out, and the above-mentioned loudspeaker. Or it has a signal transmitting means to transmit the above-mentioned acoustic signal or the above-mentioned receiving sound signal to the headphone connected to the above-mentioned plug inserted in the above-mentioned headset jack with the above-mentioned external microphone. If the above-mentioned control means has arrival of the mail when having sent out the above-mentioned acoustic signal to the above-mentioned earphone with the above-mentioned signal sending-out means the above-mentioned body microphone of arbitration -- and -- or the pocket mold wireless terminal according to claim 6 characterized by controlling the above-mentioned signal taking-in means to incorporate the above-mentioned transmitting sound signal from the above-mentioned external microphone.

[Claim 8] It has a taking-in assignment means for inputting the taking-in assignment instruction which specifies the above-mentioned body microphone and the above-mentioned external microphone which should collect the above-mentioned user's above-mentioned voice. The above-mentioned control means the above-mentioned signal taking-in means -- the above-mentioned body microphone -- and -- or, if the above-mentioned taking-in assignment instruction is inputted through the above-mentioned taking-in assignment means when having incorporated the above-mentioned transmitting sound signal from the above-mentioned external microphone the above-mentioned body microphone according to the taking-in

assignment instruction concerned -- and -- or the pocket mold wireless terminal according to claim 7 characterized by controlling the above-mentioned signal taking-in means to incorporate the above-mentioned transmitting sound signal from the above-mentioned external microphone.

[Claim 9] The sending-out step which sends out the above-mentioned acoustic signal of arbitration to at least one of the loudspeaker prepared in the pocket mold wireless terminal, and the earphones connected to the plug inserted in the earphone jack prepared in the pocket mold wireless terminal concerned possible [extraction and insertion], the above-mentioned loudspeaker -- and -- or the above-mentioned loudspeaker specified as the above-mentioned earphone from the condition of having sent out the above-mentioned acoustic signal -- and -- or the sound sending-out approach characterized by having the sending-out change-over step which sends out the acoustic signal or other above-mentioned acoustic signals of the above-mentioned arbitration to the above-mentioned earphone to the timing of arbitration.

[Claim 10] While transmitting the transmitting sound signal of a user's voice to a message as the playback sending-out step which reproduces the music signal concerned from the predetermined record medium with which the music signal was recorded as the above-mentioned acoustic signal, and is sent out to the above-mentioned earphone, and the above-mentioned acoustic signal It has the transceiver step which receives the receiving sound signal of a partner's voice. The above-mentioned sending-out change-over step the above-mentioned receiving sound signal received with the above-mentioned transceiver means when having sent out the above-mentioned music signal reproduced from the above-mentioned record medium to the above-mentioned earphone and there was arrival of the mail -- the above-mentioned loudspeaker of arbitration -- and -- or the sound sending-out approach according to claim 9 characterized by sending out to the above-mentioned earphone.

[Claim 11] the above-mentioned sending-out change-over step -- the above-mentioned loudspeaker -- and -- or the above-mentioned earphone corresponding to the sending-out assignment instruction concerned when have sent out the above-mentioned receiving sound signal or the above-mentioned music signal to the above-mentioned earphone and the sending-out assignment instruction specify the above-mentioned loudspeaker which should send out the above-mentioned receiving sound signal, and the above-mentioned earphone was inputted -- and -- or the sound sending-out approach according to claim 10 which characterizes by to send out an above-mentioned receiving sound signal or an above-mentioned music signal to an above-mentioned loudspeaker.

[Claim 12] If there is arrival of the mail when having sent out the above-mentioned music signal reproduced from the above-mentioned record medium to the above-mentioned earphone The body microphone formed in the above-mentioned pocket mold wireless terminal, To the above-mentioned plug inserted in the above-mentioned earphone jack, with the above-mentioned earphone The sound sending-out approach according to claim 11 characterized by having the signal taking-in step which incorporates the above-mentioned transmitting sound signal which collects the above-mentioned user's above-mentioned voice at least by one side of the arbitration of the external microphones connected, and is acquired.

[Claim 13] the above-mentioned signal taking-in step -- the above-mentioned body microphone -- and -- or the above-mentioned body microphone corresponding to taking-in assignment instruction concerned when have incorporated the above-mentioned transmitting sound signal from the above-mentioned external microphone and the taking-in assignment instruction which specifies the above-mentioned body microphone and the above-mentioned external microphone which should collect the above-mentioned user's above-mentioned voice was inputted -- and -- or the sound sending-out approach according to claim 12 which characterizes by to incorporate an above-mentioned transmitting sound signal from an above-mentioned external microphone.

[Claim 14] While transmitting the transmitting sound signal of a user's voice to a message with a pocket mold wireless terminal The transceiver step which receives the receiving sound signal of a partner's voice, and the body microphone formed in the above-mentioned pocket mold wireless terminal at the time of a message, At least by one side of the arbitration of the external microphones connected to the plug inserted in the earphone jack prepared in the pocket mold wireless terminal concerned possible [extraction and insertion] The sound taking-in approach characterized by having the signal taking-in

step which incorporates the above-mentioned transmitting sound signal which collects the above-mentioned user's above-mentioned voice, and is acquired.

[Claim 15] It has the signal transmitting step which transmits a predetermined acoustic signal to at least one side of the arbitration of the loudspeaker prepared in the above-mentioned pocket mold wireless terminal, and the headphone connected to the above-mentioned plug inserted in the above-mentioned earphone jack with the above-mentioned external microphone. The above-mentioned signal taking-in step If a control means has arrival of the mail when having sent out the above-mentioned acoustic signal to the above-mentioned earphone with the above-mentioned signal sending-out means the above-mentioned body microphone of arbitration -- and -- or the sound taking-in approach according to claim 14 characterized by incorporating the above-mentioned transmitting sound signal which collects the above-mentioned user's voice with the above-mentioned external microphone, and is acquired.

[Claim 16] the above-mentioned signal taking-in step -- the above-mentioned body microphone -- and -- or the above-mentioned body microphone corresponding to taking-in assignment instruction concerned when have incorporated the above-mentioned transmitting sound signal from the above-mentioned external microphone and the taking-in assignment instruction which specifies the above-mentioned body microphone and the above-mentioned external microphone which should collect the above-mentioned user's above-mentioned voice was inputted -- and -- or the sound taking-in approach according to claim 15 which characterizes by to incorporate an above-mentioned transmitting sound signal from an above-mentioned external microphone.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is applied to the a digital cellular phone terminal which has the regenerative function of music data, concerning the sound taking-in approach, and is suitable for a pocket mold wireless terminal and the sound sending-out approach list.

[0002]

[Description of the Prior Art] When recording music on internal memory as digital data and not telephoning it at a going-out place etc. as a a digital cellular phone terminal recently, there are some which were made as [enjoy / music data are reproduced from memory as a music regenerative apparatus of a pocket mold, and / music].

[0003]

[Problem(s) to be Solved by the Invention] By the way, the sound emission of the music based on the music signal from the earphone concerned by reproducing the music data from memory in the condition were inserted in the earphone jack by which the plug which an earphone is used in the a digital cellular phone terminal of this configuration at the time of playback of music data, and is connected to the earphone concerned was prepared in the a digital cellular phone terminal, changing the played music data concerned into the music signal of an analog, and sending out to an earphone through an earphone jack to a plug carries out.

[0004] Moreover, if a a digital cellular phone terminal has arrival of the mail during playback of music data, it will report that carried out sound emission of the ringer tone with music from the earphone, and the user had arrival of the mail by superimposing the signal for ringer tones on the music signal according to the music data concerned, and sending out to an earphone.

[0005] Thereby, the a digital cellular phone terminal is made as [make / the arrival is reported to a user and / it / to telephone to a partner], even if arrival of the mail is during playback of music data.

[0006] However, in this digital cellular phone terminal, the earphone jack is a mechanical change-over switch, if the plug of an earphone is inserted in the earphone jack concerned, it will replace with the loudspeaker prepared in the a digital cellular phone terminal, and only the earphone will be operated compulsorily.

[0007] For this reason, as the a digital cellular phone terminal was listening to music using the earphone, when it had arrival of the mail, in order that it might make a user telephone to a partner, it had to draw out the plug of an earphone from the earphone jack, had to operate the loudspeaker, and had a user-unfriendly problem.

[0008] This invention was made in consideration of the above point, and tends to propose the sound taking-in approach in the pocket mold wireless terminal and the sound sending-out approach list which may improve user-friendliness.

[0009]

→ [Means for Solving the Problem] In order to solve this technical problem, it sets to this invention. The earphone jack in which the plug connected to the loudspeaker which carries out sound emission of the

sound based on a predetermined acoustic signal, and the earphone which carries out sound emission of the sound based on the acoustic signal concerned is inserted possible [extraction and insertion], A signal sending-out means to send out an acoustic signal to a loudspeaker or to send out an acoustic signal to an earphone through a plug from an earphone jack, a loudspeaker -- and -- or the loudspeaker specified when having sent out the acoustic signal of arbitration to the earphone -- and -- or the control means which controls a signal sending-out means to send out the acoustic signal or other acoustic signals of arbitration to an earphone to the timing of arbitration was established.

[0010] therefore, a loudspeaker -- and -- or the loudspeaker of the request selected to arbitration even if it did not draw out a plug from an earphone jack, when having sent out the acoustic signal to the earphone -- and -- or it can switch to an earphone and an acoustic signal can be sent out.

[0011] Moreover, the body microphone which collects a user's voice to a message in this invention, The earphone jack in which the plug connected to the external microphone which collects a user's voice similarly is inserted possible [extraction and insertion], A signal taking-in means to incorporate the transmitting sound signal which collects a user's voice with a body microphone and is acquired, or to incorporate the transmitting sound signal which collects a user's voice by the earphone and is acquired, the time of the plug being inserted in the earphone jack -- the body microphone of arbitration -- and -- or the control means which controls a signal taking-in means to incorporate the transmitting sound signal which collects a user's voice with an external microphone and is acquired was established.

[0012] Therefore, even if it does not draw out a plug from an earphone jack, a user's voice can be collected to a message through a body microphone.

[0013]

[Embodiment of the Invention] About a drawing, the gestalt of 1 operation of this invention is explained in full detail below.

[0014] In drawing 1 , 1 shows the a digital cellular phone terminal which applied this invention as a whole, and the display 2 and the body 3 are formed possible [folding] through the hinge region 4.

[0015] The antenna 5 for transmission and reception is formed in the drawer and the condition which can be contained, and it is made by the top right corner section of a display 2 as [receive / an electric wave / between base stations (not shown) / through the antenna 5 concerned / transmit and].

[0016] Moreover, the loudspeaker 6 is formed in the upper limit center section of the transverse plane of a display 2, and it is made as [carry out / voice / of the partner under message / by the loudspeaker 6 concerned / sound emission].

[0017] Furthermore, the liquid crystal display 7 is formed in the lower part of a loudspeaker 6, and it is made by the display 2 as [display / the identifier of the receiver's address of the electronic mail registered into the liquid crystal display 7 concerned as a mail address besides being the identifier of the receive state of an electric wave, a cell residue, and the phase hand that has registered as a telephone directory, the telephone number, dispatch hysteresis, etc., a mail address, the contents of the electronic mail a simple homepage, a web page, etc.].

[0018] On the other hand, the actuation keys 8, such as the numerical keypad of "0" thru/or "9", a call origination key, a redial key, clear back and a power-source key, a clear key, and an electronic mail key, are arranged in the front face of a body 3, and it is made as [input / using the actuation key 8 concerned / various directions].

[0019] Moreover, while MEMOBOTAN 9 and a microphone (this is hereafter called a body microphone) 10 are formed in the front face of a body 3 at the lower part of the actuation key 8 and being able to record the voice of the partner under message by MEMOBOTAN 9 concerned, it is made as [collect / with the body microphone 10 / the voice of the user at the time of a message].

[0020] Furthermore, the rotation handler in which rotation actuation and press actuation in the upper part of the actuation key 8 are free in the front face of a body 3 It is prepared as slightly projected in 11 from the front face of a body 3. (This is hereafter called a jog dial) While scrolling actuation of the list of the telephone directories and mail addresses which are displayed on the liquid crystal display 7, the contents of the electronic mail, etc., and a simple homepage and a web page roll up according to rotation actuation of the jog dial 11 concerned and performing actuation etc. It is made as [carry out / according

to press actuation of the jog dial 11 / from the list of a telephone directory or mail addresses / selection assignment of the desired telephone number or a desired mail address].

[0021] In addition, as shown in drawing 2 , if the rear face of a body 3 is equipped with the battery pack 12 which can be detached and attached freely and it is turned on according to the depression of clear back and a power-source key, power will be supplied from the battery pack 12 concerned to each internal circuit, and it will start in the condition that it can operate.

[0022] Moreover, the memory stick slot 14 for loading the interior of a body 3 with the memory stick (Sony , Inc. trademark) 13 which can be taken out and inserted freely is formed in the hinge region 4, and if MEMOBOTAN 9 is pushed, the voice of the partner under message to a memory stick 13 is recorded, or it is made as [carry out / according to actuation of a user / record playback of the various data, such as an electronic mail, a simple homepage, and music data,].

[0023] Here, a memory stick 13 is a kind of the flash memory card developed by Sony Corp. which is an applicant for this patent. This memory stick 13 is length 21.5 [mm], width 50 [mm], and thickness. The flash memory component which is a kind of EEPROM (Electrically Erasable and Programmable Read Only Memory) which is the nonvolatile memory in which rewriting and elimination are possible electrically is stored in the plastics case of the small thin configuration of 2.8 [mm], and a store and read-out of various data, such as an image, and voice, music, have become possible through 10 pin terminals.

[0024] Moreover, the original serial protocol which can secure compatibility by the device to be used is used for a memory stick 13 also to specification modification of the built-in flash memory by large-capacity-izing etc., for example, it is the maximum writing speed. While having realized the high-speed engine performance of 1.5 [MB/S] and the maximum read-out rate 2.45 [MB/S], the incorrect elimination prevention switch was formed and high dependability is secured.

[0025] And since it is constituted possible [loading of such a memory stick 13], the a digital cellular phone terminal 1 is made as [attain / among other electronic equipment / through the memory stick 13 concerned / share-ization of various data, such as music data,].

[0026] Incidentally, although a a digital cellular phone terminal 1 can also load with the memory stick 13 which recorded music data beforehand with external audio equipment etc. (not shown), as shown in drawing 1 , the connection terminal 15 for connecting with external audio equipment etc. is formed in the right lateral of a display 2, and it can also record the music data obtained from external audio equipment etc. through the connection terminal 15 on the memory stick 13 within the memory stick slot 14.

[0027] By the way, the earphone jack 16 is formed in the left lateral of a display 2, and a a digital cellular phone terminal 1 (drawing 1) can insert the plug 21 which can take out and insert the head set 20 as shown in the earphone jack 16 concerned at drawing 3 .

[0028] In this case, as shown in drawing 3 , an earphone 25 is connected to the remote control 23 concerned through a cable (this is hereafter called an earphone side cable) 24, and the head set 20 is constituted while remote control 23 is connected to a plug 21 through a cable (this is hereafter called a plug side cable) 22.

[0029] And the liquid crystal display section 27 which displays the title of the music under playback / earth switch 26 of music data, and playback etc., on-hook/off-hook carbon button 28, and the microphone (this is hereafter called external microphone) 29 grade are prepared in the remote control 23 of a head set 20.

[0030] Here, the a digital cellular phone terminal 1 is made by operating a loudspeaker 6 and the body microphone 10 as [make / it / to talk over the telephone using the loudspeaker 6 concerned and the body microphone 10] in the condition that the plug 21 of a head set 20 is not inserted in the earphone jack 16.

[0031] Moreover, when the plug 21 of a head set 20 is inserted in the earphone jack 16, a a digital cellular phone terminal 1 is replaced with a loudspeaker 6 and the body microphone 10, and is made as [operate / the earphone 25 and the external microphone 29 of a head set 20].

[0032] Therefore, if playback / earth switch 26 of remote control 23 are pushed where the plug 21 of a

head set 20 is inserted in the earphone jack 16, a digital cellular phone terminal 1 Music data are reproduced from a memory stick 13. Sound emission of the music based on a music signal is carried out from the earphone 25 concerned by changing the reproduced music data concerned into a music signal, and sending out to an earphone 25 through a plug 21, the plug side cable 22, remote control 23, and the earphone side cable 24 one by one from the earphone jack 16.

[0033] Moreover, a digital cellular phone terminal 1 also reproduces the digital addition data which consist of a title of the music currently recorded with music data from the memory stick 13 etc. at this time. By changing the reproduced addition data concerned into the additional signal of an analog, and sending out to remote control 23 through a plug 21 and the plug side cable 22 one by one from the earphone jack 16 The title of the music under playback etc. is displayed on the liquid crystal display section 27 of the remote control 23 concerned based on the additional signal.

[0034] Thus, the a digital cellular phone terminal 1 is made as [enjoy / a user / the music currently recorded on the memory stick 13].

→ [0035] And if a digital cellular phone terminal 1 has arrival of the mail during playback of such music data, it will report that carried out sound emission of the ringer tone with music from the earphone 25 concerned, and the user had arrival of the mail by superimposing the signal for ringer tones on the music signal according to the music data, and sending out to the earphone 25 of a head set 20.

→ [0036] Consequently, if on-hook/off-hook carbon button 28 of remote control 23 is pushed by the user, a digital cellular phone terminal 1 The voice data of the voice of the partner who suspended playback of music data and received at this time A sound signal (Hereafter) By changing for calling this a receiving sound signal, and sending out to an earphone 25 through a plug 21, the plug side cable 22, remote control 23, and the earphone side cable 24 one by one from the earphone jack 16 Sound emission is carried out [voice / based on the receiving sound signal / of a partner] from the earphone 25 concerned.

[0037] Moreover, a digital cellular phone terminal 1 transmits that transmitting sound signal to a base station from an antenna 5 by collecting a user's voice with the external microphone 29 of remote control 23 at this time, and incorporating the acquired sound signal (it being transmitting sound signal **** about the following and this) from the earphone jack 16 through the plug side cable 22 and a plug 21 one by one.

→ [0038] Thus, if a digital cellular phone terminal 1 has arrival of the mail also in playback of music data, it will form a message between a user and a partner using the earphone 25 and the external microphone 29 of a head set 20.

[0039] Incidentally, it is made for a digital cellular phone terminal 1 not to receive depression actuation of playback / earth switch 26 of remote control 23 during the message with a user and a partner, and after on-hook/off-hook carbon button 28 of the remote control 23 concerned is pushed again and the message with a user and a partner is completed, it receives depression actuation of playback / earth switch 26 of remote control 23.

[0040] And the a digital cellular phone terminal 1 is made as [tell / reproduce succeedingly from the time of suspending playback at the time of message initiation and /, for example / music data / a user], if playback / earth switch 26 of remote control 23 are pushed after a message is completed.

[0041] In addition to this configuration, the change-over carbon button 30 which in the case of this digital cellular phone terminal 1 becomes I/O of the sound signal for a message (a transmitting sound signal and receiving sound signal) at the front-face bottom of a body 3 with the toggle switch for operating either of the earphone 25 of a head set 20 and the external microphone 29, and a loudspeaker 6 and the body microphone 10 as shown in drawing 1 is formed.

[0042] In this case, the talk mode to which, as for a digital cellular phone terminal 1, the user and the partner are telephoning (This is only hereafter called talk mode) By operating only a loudspeaker 6 and the body microphone 10 in the condition that the plug 21 of a head set 20 is not sometimes inserted at the earphone jack 16, and not receiving depression actuation of a change-over switch 30 It has prevented that I/O of a sound signal (a transmitting sound signal and receiving sound signal) switches to a head set 20 by press actuation of the change-over carbon button 30 during the message using a loudspeaker 6 and the body microphone 10, and a message breaks off.

[0043] Moreover, the a digital cellular phone terminal 1 has prevented that the music currently listened to by the earphone 25 switches to a loudspeaker 6 by depression actuation of the change-over carbon button 30, and breaks off by not receiving depression actuation of the change-over carbon button 30, while reproducing music data, although the plug 21 of a head set 20 is inserted in the earphone jack 16.

→ [0044] On the other hand, an earphone 25 and the external microphone 29, and the loudspeaker 6 and the body microphone 10 of a head set 20 are switched by turns one by one, and a a digital cellular phone terminal 1 is operated, whenever the change-over carbon button 30 concerned is pushed at the time of talk mode, as depression actuation of a change-over switch 30 is received in the condition that the plug 21 of a head set 20 is inserted in the earphone jack 16.

[0045] Therefore, if the change-over carbon button 30 is pushed in the condition of the plug 21 of a head set 20 being inserted in the earphone jack 16, and operating the earphone 25 and the external microphone 29, at the time of talk mode, this digital cellular phone terminal 1 While making a user support a body 3 and making a loudspeaker 6 pressed against a lug by replacing with the earphone 25 and the external microphone 29 of the head set 20 concerned, and operating a loudspeaker 6 and the body microphone 10 the body microphone 10 -- the month -- it is made as [make / it / to telephone to a partner in the condition that you made it located in near].

→ [0046] Moreover, this digital cellular phone terminal 1 is made as [make / it / to talk over the telephone using a head set 20] by replacing with the loudspeaker 6 concerned and the body microphone 10 according to depression actuation of the change-over carbon button 30, and operating an earphone 25 and the external microphone 29, if the loudspeaker 6 and the body microphone 10 are operated where the plug 21 of a head set 20 is inserted in the earphone jack 16 at the time of talk mode.

→ [0047] Thus, a a digital cellular phone terminal 1 is set in the condition that the plug 21 of a head set 20 was inserted in the earphone jack 16. Request that a user wants to support a body 3 and to talk over the telephone during playback of music data, and the message using a head set 20, or By or the simple actuation which carries out depression actuation of the change-over carbon button 30 when it requests that he wants to use both hands for the midst which supports a body 3 and is talking over the telephone freely It is made as [make / an earphone 25 and the external microphone 29, and the loudspeaker 6 and the body microphone 10 of a head set 20 are switched easily, and / microphone / to use it].

[0048] Incidentally, when a message is closed operating a loudspeaker 6 and the body microphone 10 where the plug 21 of a head set 20 is inserted in the earphone jack 16, a a digital cellular phone terminal 1 By replacing with a loudspeaker 6 and the body microphone 10, and operating an earphone 25 and the external microphone 29 automatically, when the message concerned is completed Even if it reproduces music data after termination of a message, while being able to tell a user music through a head set 20, without carrying out change-over actuation with a loudspeaker 6 and the body microphone 10, an earphone 25, and the external microphone 29 Even if arrival of the mail is during playback of the music data again, it is made as [report / this / to a user / accurately].

[0049] Moreover, a a digital cellular phone terminal 1 forms the message with a user and a partner not only by depression actuation of on-hook/off-hook carbon button 28 of remote control 23 but by depression actuation of the call origination key of a body 3, when there is arrival of the mail, where the plug 21 of a head set 20 is inserted in the earphone jack 16.

→ [0050] Furthermore, if the plug 21 of a head set 20 is inserted in the earphone jack 16 at the time of talk mode, a a digital cellular phone terminal 1 Even if it is operating any of an earphone 25 and the external microphone 29, and loudspeakers 6 and the body microphones 10 Any depression actuation of on-hook/off-hook carbon button 28 of the remote control 23 of a head set 20, and the clear back of a body 3 and power-source keys was received, the message was closed, and it has prevented that operability is spoiled.

[0051] Next, the circuitry of a a digital cellular phone terminal 1 is explained to a detail using drawing 4. In this case, the a digital cellular phone terminal 1 Maine Bath 41 is main control minded [which controls a display 2 and each part of a body 3 in generalization / 40]. While the power circuit section 42, the actuation input-control section 43, the connection terminal 15, the LCD (Liquid Crystal Display) control section 44, the image decoder 45, the demultiplexing section 46, the record playback section 47,

Codec

the strange demodulator circuit section 48, and the voice codec 49 are connected Through the synchronous bus 50, it connects mutually and the image decoder 45; the demultiplexing section 46, the record playback section 47, the strange demodulator circuit section 48, and the voice codec 49 are constituted.

→ [0052] The main control section ~~40~~ consists of a CPU (Central Processing Unit), a ROM (Read Only Memory), RAM (Random Access Memory), etc., if an ON instruction is inputted through the actuation input-control section 43 when clear back and a power-source key are pressed by the user, will supply the power obtained from a battery pack 12 (drawing 2) to each part through the power circuit section 42, and, thereby, will start a a digital cellular phone terminal 1 in the condition that it can operate.

→ [0053] Moreover, the main control section 40 changes into voice data the transmitting sound signal which collected a user's voice and was acquired with the body microphone 10 by the voice codec 49 in the condition that the plug 21 of a head set 20 is not inserted in the earphone jack 16 at the time of talk mode.

[0054] And after the main control section 40 performs spectrum diffusion process to the voice data obtained by the voice codec 49 in the strange demodulator circuit section 48, in the transceiver circuit section 51, it performs digital-to-analog processing and frequency-conversion processing one by one, and transmits the obtained sending signal for transmitting sound signals to a base station (not shown) through an antenna 5.

[0055] In addition, after the main control section 40 amplifies the input signal for receiving sound signals which received with the antenna 5 in the transceiver circuit section 51 and performs frequency conversion processing and analog-to-digital transform processing one by one at the time of talk mode, it performs spectrum back-diffusion-of-electrons processing in the strange demodulator circuit section 48. Sound emission is carried out [voice / based on a receiving sound signal / of a partner] from the loudspeaker 6 concerned by changing the obtained voice data into a receiving sound signal by the voice codec 49, and transmitting to a loudspeaker 6.

[0056] On the other hand, when transmitting an electronic mail at the time of data communication mode, after the main control section 40 performs spectrum diffusion process to the text data of the electronic mail inputted through the actuation input-control section 43 according to actuation of the actuation key 8 and the jog dial 11 in the strange demodulator circuit section 99, in the transceiver circuit section 51, it performs digital-to-analog processing and frequency-conversion processing one by one, and transmits the obtained sending signal for electronic mails to a base station through an antenna 5.

[0057] Moreover, when receiving an electronic mail at the time of data communication mode, the main control section 40 restores the original text data by performing spectrum back-diffusion-of-electrons processing by the strange demodulator circuit section 48, after it amplifies the input signal for electronic mails which received with the antenna 5 by the transceiver circuit section 51 and performs frequency conversion processing and analog-to-digital transform processing one by one.

[0058] And the main control section 40 displays the electronic mail of the partner based on the text data on the liquid crystal display 7 concerned by sending out the restored text data to a liquid crystal display 7 through the LCD control section 44.

[0059] Incidentally, the main control section 40 can record the received electronic mail on a memory stick 13 through the record playback section 47 according to actuation of a user.

[0060] Furthermore, when receiving a simple homepage at the time of data communication mode, the main control section 40 performs spectrum diffusion process by the strange demodulator circuit section 48, after it amplifies the input signal for simple homepages which received with the antenna 5 by the transceiver circuit section 51 and performs frequency conversion processing and analog-to-digital transform processing one by one, and sends out the obtained multiplexing data to the demultiplexing section 46.

[0061] And the main control section 40 sends out voice data to the voice codec 49 through the synchronous bus 50 while it divides the multiplexing data into coded-image data and voice data and sends out the coded-image data concerned to the image decoder 45 through the synchronous bus 50 by

the demultiplexing section 46.

[0062] Thereby, the main control section 40 displays the image of the simple homepage based on the image data on the liquid crystal display 7 concerned by decoding the coded-image data by the decryption method corresponding to a predetermined coding method, and sending out the obtained image data to a liquid crystal display 7 through the LCD control section 44 by the image decoder 45.

[0063] At this time, by changing voice data into a sound signal and sending out to a loudspeaker 6 by the voice codec 49, the main control section 40 synchronizes the sound effect of the simple homepage based on that voice data etc. with the image of the simple homepage concerned, and it carries out sound emission from the loudspeaker 6 concerned.

[0064] Incidentally, the main control section 40 can record the multiplexing data of a simple homepage on a memory stick 13 through the record playback section 47 according to actuation of a user like the case where an electronic mail is received also in this case.

[0065] In addition, at the time of the data-logging mode which records music data on a memory stick 13, the main control section 40 incorporates the music data supplied from external audio equipment etc. according to actuation of a user (not shown) through the connection terminal 15, and records the incorporated music data concerned on a memory stick 13 through the record playback section 47.

[0066] By the way, it flows until the plug 21 of a head set 20 is inserted, and when the plug 21 concerned is inserted, the contact (this is hereafter called the contact for detection) for detecting whether the plug 21 was inserted is prepared in the interior of the earphone jack 16 by being pushed on the plug 21 and opening.

[0067] And the voice codec 49 supervises the value change of the electrical potential difference, impressing the electrical potential difference of the predetermined value (this is hereafter called default value) beforehand set as the contact for detection in the earphone jack 16.

[0068] Here, when the contact for detection has flowed, the voice codec 49 detects the electrical potential difference of the default value currently impressed to the contact for detection concerned as it is, until the plug 21 of a head set 20 is inserted in the earphone jack 16.

➔ [0069] On the other hand, if the plug 21 of a head set 20 is inserted in the earphone jack 16, the voice codec 49 will detect the value (for example, 0 [V]) lower than default value as a value of the electrical potential difference currently impressed to the contact for detection concerned, when the contact for detection opens.

➔ [0070] Therefore, if the electrical potential difference of default value is detected impressing an electrical potential difference to the contact for detection in the earphone jack 16, the voice codec 49 will judge that the plug 21 of a head set 20 is not inserted in the earphone jack 16 concerned, and will notify the decision result to the main control section 40.

➔ [0071] Moreover, if it detects that the electrical potential difference currently impressed to the contact for detection in the earphone jack 16 fell below to default value, the voice codec 49 will judge that the plug 21 of a head set 20 was inserted in the earphone jack 16 concerned, and will notify the decision result to the main control section 40.

➔ [0072] Thereby, the main control section 40 recognizes whether the plug 21 of a head set 20 is inserted in the earphone jack 16 based on the decision result notified from the voice codec 49.

➔ [0073] And the switching device (not shown) which switches any of the earphone 25 of a head set 20 and the external microphone 29, and the loudspeaker 6 and the body microphone 10 are connected to the object for the output of a receiving sound signal and the input of a transmitting sound signal is prepared in the voice codec 49.

➔ [0074] Therefore, the main control section 40 is made as [make / it / to talk over the telephone using the loudspeaker 6 concerned and the body microphone 10] (sound emission, such as arrival of the mail and a sound effect of a simple homepage, is also included) by connecting a loudspeaker 6 and the body microphone 10 to the voice codec 49 by the switching device, while recognizing it as the plug 21 of a head set 20 not being inserted in the earphone jack 16 according to the decision result given from the voice codec 49.

[0075] Moreover, the main control section 40 connects the earphone 25 and the external microphone 29

of a head set 20 to the voice codec 49 by the switching device, when it has recognized that the plug 21 of a head set 20 was inserted in the earphone jack 16 according to the decision result given from the voice codec 49.

[0076] By this, if a playback instruction is inputted into remote control 23 according to depression actuation of the playback / earth switch 26 by the user where the plug 21 of a head set 20 is inserted in the earphone jack 16, the main control section 40 The playback instruction is incorporated through the plug side cable 22, a plug 21, the earphone jack 16, and the voice codec 49 one by one from the remote control 23 concerned. While reproducing music data from a memory stick 13 through the record playback section 47 based on the incorporated playback instruction concerned, by the voice codec 49, the reproduced music data concerned are changed into a music signal, and are sent out to a head set 20 from the earphone jack 16.

[0077] And if the main control section 40 has arrival of the mail during playback of such music data, it will report that there was arrival of the mail, superimposing the signal for arrival of the mail on a music signal from the voice codec 49, sending out to a head set 20, and telling a user music in this way.

[0078] Here, the main control section 40 receives depression actuation of the change-over carbon button 30 until the message by this arrival will be completed from the time of there being the arrival concerned, if there is arrival of the mail where the plug 21 of a head set 20 is inserted in the earphone jack 16.

[0079] By this, if the change-over carbon button 30 is pushed in the case of the message which used the head set 20, the main control section 40 According to this, replace with the earphone 25 and the external microphone 29 of a head set 20 by the switching device at the voice codec 49, and a loudspeaker 6 and the body microphone 10 are connected. While carrying out [voice / of the partner who did sound emission from the earphone 25 in this way] sound emission from a loudspeaker 6, the voice of the user who was collecting the sound through the external microphone 29 is collected through the body microphone 10.

[0080] Moreover, if the change-over carbon button 30 is again pushed after switching the main control section 40 to an earphone 25 and the external microphone 29 and operating a loudspeaker 6 and the body microphone 10 While carrying out [voice / of the partner who did sound emission from the loudspeaker 6 concerned by replacing with a loudspeaker 6 and the body microphone 10, and connecting an earphone 25 and the external microphone 29 to the voice codec 49 by the switching device according to this] sound emission from an earphone 25 The voice of the user who was collecting the sound through the telephone macro phone 10 is collected through the external microphone 29.

[0081] Thus, the main control section 40 is made as [operate / an earphone 25 and the external microphone 29, and a loudspeaker 6 and the body microphone 10 are switched by turns one by one, and / microphone], whenever the change-over carbon button 30 is pushed until the message by this arrival is completed from the time of there being arrival of the mail where the plug 21 of a head set 20 is inserted in the earphone jack 16.

➤ [0082] Where the plug 21 of a head set 20 is inserted in the earphone jack 16, after the main control section 40 incidentally starts a message, If on-hook/off-hook carbon button 28 of remote control 23 is pushed by the user and an off-hook (clear back) instruction is inputted, operating a loudspeaker 6 and the body microphone 10, while closing a message according to this At this time, it replaces with a loudspeaker 6 and the body microphone 10 by the switching device, and an earphone 25 and the external microphone 29 are connected to the voice codec 49.

[0083] In practice, the main control section 40 is made as [perform / change-over processing of I/O of such a transmitting sound signal and a receiving sound signal / to internal ROM / according to the change-over processing program memorized beforehand].

[0084] Namely, the main control section 40 will be in the condition that it can operate, according to the depression of clear back and a power-source key in the condition that the plug 21 of a head set 20 is not inserted in the earphone jack 16. Then, if it explains taking the case of the case where arrival of the mail is during playback of the music data using a head set 20 According to the change-over processing program similarly transmitted and developed from internal ROM to internal RAM, it goes into the change-over procedure RT 1 shown in drawing 5 from a step SP 1, and progresses to the continuing step

SP 2.

[0085] In a step SP 2, the main control section 40 connects a loudspeaker 6 and the body microphone 10 to the voice codec 49 concerned by the switching device according to the decision result judged that the plug 21 of a head set 20 is not inserted in the earphone jack 16 by the voice codec 49, and progresses to a step SP 3.

[0086] In a step SP 3, the main control section 40 judges whether clear back and a power-source key were pressed.

[0087] Obtaining a negative result in this step SP 3 means that the a digital cellular phone terminal 1 is used for the message with the waiting receptacle of a message, a user, and a partner, transmission and reception of an electronic mail, etc. in the condition that the plug 21 of a head set 20 is not inserted in the earphone jack 16, and it judges whether the main control section 40 progressed to a step SP 4, and the plug 21 of a head set 20 was inserted in the earphone jack 16 at this time.

[0088] Obtaining a negative result in this step SP 4 A a digital cellular phone terminal 1 means being used without using a head set 20 by not inserting the plug 21 of a head set 20 in the earphone jack 16. At this time If clear back and a power-source key will be pressed and the main control section 40 will not be in an OFF state by returning to a step SP 3, it awaits that a head set 20 is used as step SP4-SP3-SP's4 processing loop formation is repeated.

[0089] On the other hand, the thing for which an affirmation result is obtained in a step SP 4 For example, it means having recognized this according to the decision result to which it is given from the voice codec 49 by having inserted the plug 21 of a head set 20 in the earphone jack 16, in order to listen to music using a head set 20. At this time, the main control section 40 progresses to a step SP 5, connects an earphone 25 and the external microphone 29 to voice Kotec 49 by the switching device, and progresses to a step SP 6.

[0090] In a step SP 6, the main control section 40 judges whether the plug 21 of a head set 20 was pulled out from the earphone jack 16.

[0091] Obtaining a negative result in this step SP 6 means that the user is listening to the music played from the memory stick 13 using the head set 20, and it judges whether the main control section 40 progressed to a step SP 7, and clear back and a power-source key were pressed at this time.

[0092] Obtaining a negative result in a step SP 7 means that the user is listening to the music played from the memory stick 13 using the head set 20 as it was, and it judges whether the main control section 40 progresses to a step SP 8, and has arrival of the mail at this time.

[0093] Obtaining a negative result in a step SP 8 means that there is no arrival of the mail at this time, and at this time, if the plug 21 of a head set 20 will lengthen, it blunders enough from the earphone jack 16, clear back and a power-source key will be pressed and the main control section 40 will not be in an OFF state by returning to a step SP 6, as it repeats step SP8-SP6-SP7-SP's8 processing loop formation, it awaits arrival of the mail.

[0094] On the other hand, the thing for which an affirmation result is obtained in a step SP 8 It means that there was arrival of the mail as the user was listening to music using the head set 20. At this time for example, the main control section 40 After progressing to a step SP 9 and forming the message with the user and partner using a head set 20 according to the depression of the call origination key of on-hook/off-hook carbon button 28 of the remote control 23 by the user, or a body 3, it judges whether it progressed to the continuing step SP 10, and the message was completed.

[0095] Obtaining a negative result in a step SP 10 means that the change-over carbon button 30 of a body 3 may be pushed by the user during the message with a partner, and it judges whether the main control section 40 progressed to a step SP 11, and the change-over carbon button 30 was pushed by the user at this time.

[0096] Obtaining a negative result in a step SP 11 It means that the change-over carbon button 30 may be pushed by the user in between [until a message is completed] although the change-over carbon button 30 is not pushed by the user at this time. At this time The main control section 40 awaits that the change-over carbon button 30 is pushed, repeating step SP11-SP10-SP's11 processing loop formation until the message with a user and a partner is completed return and after this to a step SP 10.

[0097] On the other hand, the thing for which an affirmation result is obtained in a step SP 11 It means that the change-over carbon button 30 was pushed in order to talk over the telephone using a loudspeaker 6 and the body microphone 10 by the user. At this time the main control section 40 It progresses to a step SP 12. To the voice codec 49 by the switching device By replacing with an earphone 25 and the external microphone 29, and connecting a loudspeaker 6 and the body microphone 10, use the loudspeaker 6 and the body microphone 10 for a user, and it is made to telephone to a partner succeedingly, and returns to a step SP 10.

[0098] Thereby, a loudspeaker 6 and the body microphone 10, and an earphone 25 and the external microphone 29 are switched by turns one by one, and the main control section 40 operates them, whenever the change-over carbon button 30 is pushed, as step SP10-SP11-SP12-SP's10 processing loop formation is repeated until the clear back and the power-source key of on-hook/off-hook carbon button 28 of remote control 23 or a body 3 are pressed by the user and a message is completed after this.

[0099] Then, if the main control section 40 closes a message and an affirmation result is obtained in a step SP 10 when the clear back and the power-source key of on-hook/off-hook carbon button 28 of remote control 23 or a body 3 are pressed by the user Returning to a step SP 6, for example, reproducing music data from a memory stick 13 according to actuation of a user again From the earphone jack 16, the plug 21 of a head set 20 lengthens and blunder enough, and if clear back and a power-source key will be pressed and it will not be in an OFF state, it is made to repeat step SP8-SP6-SP7-SP's8 processing loop formation.

[0100] And it means that clear back and a power-source key were pressed by the user, and obtaining an affirmation result in a step SP 7 was turned off, and at this time, the main control section 40 progresses to a step SP 13, and ends the change-over procedure RT 1.

[0101] Incidentally obtaining an affirmation result in a step SP 6 means that playback of the music data which used the head set 20 was completed, and the plug 21 of a head set 20 was drawn out from the earphone jack 16, and the main control section 40 returns to a step SP 2 at this time.

[0102] Moreover, it means that clear back and a power-source key were pressed by the user, and obtaining an affirmation result in a step SP 3 was turned off, and at this time, the main control section 40 progresses to a step SP 13, and ends the change-over procedure RT 1.

[0103] The change-over carbon button 30 was formed in the body 3, and where the plug 21 of a head set 20 is inserted in the earphone jack 16, when talking over the telephone, according to depression actuation of that change-over carbon button 30, the earphone 25 of the head set 20 concerned and the external microphone 29, and the loudspeaker 6 and the body microphone 10 of a digital cellular phone terminal 1 are switched, and it was made to make it function with this digital cellular phone terminal 1 in the above configuration.

[0104] Therefore, when it requests that he wants for a user to support a body 3 in this digital cellular phone terminal 1 even if the plug 21 of a head set 20 is inserted in the earphone jack 16, and to talk over the telephone using a loudspeaker 6 and the body microphone 10 Only by carrying out depression actuation of the change-over carbon button 30, without drawing out a plug 21 from the earphone jack 16 concerned It can be used for the condition of having operated the loudspeaker 6 and the body microphone 10, switching easily from the condition of having operated the earphone 25 and the external microphone 29 of a head set 20.

[0105] Moreover, it can switch to the condition of having operated the earphone 25 and the external microphone 29 of a head set 20, easily from the condition of having operated the loudspeaker 6 and the body microphone 10, and can be made to use it only by carrying out depression actuation of the change-over carbon button 30, when it requests that a user wants to use both hands while having talked over the telephone using the loudspeaker 6 and the body microphone 10 when the plug 21 of a head set 20 was inserted in the earphone jack 16 in the a digital cellular phone terminal 1.

[0106] The plug needed to be frequently taken [incidentally, / when a plug needed to be drawn out from an earphone jack in order to replace with the earphone concerned and to operate a loudspeaker while the plug of an earphone is inserted in an earphone jack and talking over the telephone] out and inserted like the conventional a digital cellular phone terminal, so that there were many opportunities of a change-

over of such a function.

[0107] On the other hand, since according to the gestalt of this operation the change-over carbon button 30 for switching any of an earphone 25 and the external microphone 29, and the loudspeaker 6 and the body microphone 10 are operated is formed while the plug 21 of a head set 20 is inserted in the earphone jack 16 and talking over the telephone, compared with the case of the conventional a digital cellular phone terminal, wear of the plug 21 of the earphone jack 16 concerned and a head set 20 etc. can be stopped to the minimum.

[0108] When according to the above configuration form the change-over carbon button 30 in a body 3, the plug 21 of a head set 20 is inserted in the earphone jack 16, an earphone 25 and the external microphone 29 are operated and it talks over the telephone, By replacing with the earphone 25 concerned and the external microphone 29 according to depression actuation of the change-over carbon button 30, and having made it operate a loudspeaker 6 and the body microphone 10 It can switch to the message which supported the body 3 easily from the message using a head set 20, without drawing out a plug 21 from the earphone jack 16, and the a digital cellular phone terminal which may improve user-friendliness in this way can be realized.

[0109] In addition, although the case where it was made to operate the earphone 25 of a head set 20 or the external microphone 29, or loudspeakers 6 and the body microphones 10 according to depression actuation of the change-over carbon button 30 was described in the gestalt of above-mentioned operation This invention Not only this but an earphone 25 and the external microphone 29, When the change-over carbon button 30 is pushed in the condition of having operated either the loudspeaker 6 or the body microphones 10, the earphone 25 concerned and the external microphone 29, A loudspeaker 6 and the body microphone 10 may be operated [both], or you may make it operate an earphone 25, the external microphone 29, a loudspeaker 6, and the body microphone 10 in the combination of arbitration like the combination of the external microphone 29 and a loudspeaker 6.

[0110] If it is made to operate the earphone 25 of a head set 20, and the body microphone 10 of a digital cellular phone terminal 1 incidentally, corresponding to the depression of the change-over carbon button 30 while talking over the telephone using a head set 20, even if it has a digital cellular phone terminal 1 like [when talking over the telephone, without a user using a head set 20], it can talk over the telephone, without removing an earphone 25 from a lug, and user-friendliness can be improved further.

[0111] In the gestalt of above-mentioned operation Moreover, an earphone 25 and the external microphone 29, Although the case where the change-over carbon button 30 which becomes the body 3 of a digital cellular phone terminal 1 with a toggle switch was formed was described in order to operate either of a loudspeaker 6 and the body microphone 10 This invention forms not only this but the change-over carbon button 30 concerned in the display 2 of a digital cellular phone terminal 1, or the remote control 23 of a head set 20, or You may make it prepare 1 or two or more change-over carbon buttons for operating an earphone 25, the external microphone 29, a loudspeaker 6, and the body microphone 10 in the combination of arbitration in the remote control 23 of the body 3 of a digital cellular phone terminal 1, a display 2, or a head set 20.

[0112] In addition, the ** which does not prepare mechanical 1 or two or more mechanical change-over carbon buttons in a digital cellular phone terminal 1, So that the manual operation button for switching and operating an earphone 25, the external microphone 29, a loudspeaker 6, and the body microphone 10 as the predetermined actuation screen displayed on the liquid crystal display 7 of a display 2 may be prepared It carries out, and selection assignment of the manual operation button is carried out, and you may make it operate an earphone 25, the external microphone 29, a loudspeaker 6, and the body microphone 10 as arbitration by the actuation key or the jog dial.

[0113] Furthermore, although the case where switched an earphone 25 and the external microphone 29, and a loudspeaker 6 and the body microphone 10 according to depression actuation of the change-over carbon button 30, and it was made to make it function in the gestalt of above-mentioned operation was described This invention not only in this Where the plug 21 of a head set 20 is inserted in the earphone jack 16 on the predetermined setting screen displayed on the liquid crystal display 7 of a display 2, when

there is arrival of the mail It is alike, and the earphone 25 which should be operated, the external microphone 29, and when it reaches loudspeaker 6, or it sets up the body microphone 10 beforehand and there is arrival of the mail, you may make it switch automatically according to the setup..

[0114] Furthermore, although the change-over carbon button 30 was described about the case where depression actuation is received, until the message according to the arrival is completed from the time of there being arrival of the mail in the gestalt of above-mentioned operation where the plug 21 of a head set 20 is inserted in the earphone jack 16 It may make, as a partner does call origination of this invention from a user not only with this but with the remote control 23 of a head set 20. while [thus,] carrying out call origination to a partner and talking over the telephone from the user using a head set 20 -- an earphone 25, the external microphone 29, and a loudspeaker 6 -- and -- or switching the body microphone 10, and it being operated or When carrying out sound emission of the predetermined sound, such as music, through the earphone 25 of a head set 20, a loudspeaker 6 and an earphone 25 are switched to arbitration, and you may make it operate them.

[0115] Sound, such as music which the user is listening to by the earphone 25, can be made to hear the earphone easily through a loudspeaker 6, if a loudspeaker 6 and an earphone 25 are incidentally switched and operated as arbitration when carrying out sound emission of the predetermined sound, such as music, through the earphone 25 of a head set 20, without passing other men.

[0116] furthermore, in the gestalt of above-mentioned operation, music is listened to using the head set 20 -- on the way -- if it is alike and there is arrival of the mail -- an earphone 25, the external microphone 29, and a loudspeaker 6 -- and -- or, although the case where switched the body microphone 10 and it was made to operate it was described This invention a timed-recording sound like a partner's voice reproduced and obtained or the ringer melody made himself not only using this but using the head set 20 in addition, the sound based on various acoustic signals is heard -- on the way -- the time of it being alike and there being arrival of the mail -- an earphone 25, the external microphone 29, and a loudspeaker 6 -- and -- or the body microphone 10 is switched and you may make it operate it

[0117] Furthermore, although the case where it was made to apply to the a digital cellular phone terminal 1 which shows this invention to drawing 1 thru/or drawing 5 in the gestalt of above-mentioned operation was described If this invention can send out a receiving sound signal not only to this but to an earphone or a transmitting sound signal can be incorporated from an external microphone The portable telephone which has the reception function of a radio program, and the reception function of television broadcasting, It is widely applicable to various pocket mold wireless terminals like PDA (Personal Digital Assistance) in addition with which short-distance radio techniques, such as TORASHIBA and Bluetooth, and a predetermined long distance radio technique were applied.

[0118] Furthermore, although the case where the voice codec 49 was applied was described as a signal sending-out means to send out an acoustic signal to a loudspeaker or to send out an acoustic signal to an earphone through a plug in the gestalt of above-mentioned operation from an earphone jack If this invention can send out an acoustic signal not only to this but to a loudspeaker or can send out an acoustic signal to an earphone through a plug from an earphone jack, it can apply various signal sending-out means widely.

[0119] furthermore, the gestalt of above-mentioned operation -- setting -- a loudspeaker -- and -- or the loudspeaker specified when having sent out the acoustic signal of arbitration to the earphone -- and -- or as a control means which controls a signal sending-out means to send out the acoustic signal or other acoustic signals of arbitration to an earphone to the timing of arbitration Although the case where the main control section 40 was applied was described this invention -- not only this but a loudspeaker -- and -- or the loudspeaker specified when having sent out the acoustic signal of arbitration to the earphone -- and -- or, if a signal sending-out means is controllable to send out the acoustic signal or other acoustic signals of arbitration to an earphone to the timing of arbitration In addition, various control means are widely applicable.

[0120] Furthermore, although the case where the transceiver circuit section 51 and an antenna 5 were applied was described as a transceiver means to receive the receiving sound signal of a partner's voice, in the gestalt of above-mentioned operation while transmitting the transmitting sound signal of a user's

voice to the message as an acoustic signal This invention can apply widely not only this but the transceiver means of other versatility which will be doubled with the communication mode applied to a pocket mold wireless terminal if the receiving sound signal of a partner's voice is receivable while transmitting the transmitting sound signal of a user's voice to a message as an acoustic signal.

[0121] Furthermore, although the case where the record playback section 47 was applied was described as a playback means to reproduce the music signal concerned in the gestalt of above-mentioned operation from the predetermined record medium with which the music signal was recorded as an acoustic signal This invention can apply widely the various playback-in addition to this means according to the record medium to be used, if the music signal concerned is reproducible from the record medium not only this but predetermined on which the music signal was recorded as an acoustic signal.

[0122] Furthermore, in the gestalt of above-mentioned operation, although the case where a memory stick 13 was applied was described as a predetermined record medium with which the music signal was recorded as an acoustic signal, this invention can apply various record media widely like the internal memory of not only this but a pocket mold wireless terminal.

[0123] Furthermore, although the case where the change-over carbon button 30 was applied was described as a sending-out assignment means for inputting the sending-out assignment instruction which specifies the loudspeaker and earphone which should send out a receiving sound signal in the gestalt of above-mentioned operation If this invention can input the sending-out assignment instruction which specifies the loudspeaker and earphone which should send out not only this but a receiving sound signal Like the pilot switch which detects the predetermined input screen displayed on the liquid crystal display 7 of a display 2, the switching action of a body 3 and a display 2, etc., various sending-out assignment means are widely applicable.

[0124] Furthermore, the transmitting sound signal which collects a user's voice with a body microphone and is acquired in the gestalt of above-mentioned operation is incorporated. Or although the case where the voice codec 49 was applied as a signal taking-in means to incorporate the transmitting sound signal which collects a user's voice with the external microphone connected to the plug inserted in the earphone jack with the earphone, and is acquired was described The transmitting sound signal which this invention collects a user's voice not only with this but with a body microphone, and is acquired is incorporated. Or if the transmitting sound signal which collects a user's voice with the external microphone connected to the plug inserted in the earphone jack with the earphone, and is acquired can be incorporated, various signal taking-in means are widely applicable.

[0125] Furthermore, although the case where the change-over carbon button 30 was applied was described as a taking-in assignment means for inputting the taking-in assignment instruction which specifies the body microphone and external microphone which should collect a user's voice in the gestalt of above-mentioned operation If this invention can input the taking-in assignment instruction which specifies the body microphone and external microphone which should collect not only this but a user's voice Like the pilot switch which detects the predetermined input screen displayed on the liquid crystal display 7 of a display 2, the switching action of a body 3 and a display 2, etc., various taking-in assignment means are widely applicable.

[0126]

[Effect of the Invention] The loudspeaker which carries out sound emission of the sound based on a predetermined acoustic signal as mentioned above according to this invention, The earphone jack in which the plug connected to the earphone which carries out sound emission of the sound based on the acoustic signal concerned is inserted possible [extraction and insertion], A signal sending-out means to send out an acoustic signal to a loudspeaker or to send out an acoustic signal to an earphone through a plug from an earphone jack, a loudspeaker -- and -- or the loudspeaker specified when having sent out the acoustic signal of arbitration to the earphone -- and -- or by having established the control means which controls a signal sending-out means to send out the acoustic signal or other acoustic signals of arbitration to an earphone to the timing of arbitration a loudspeaker -- and -- or, even if it does not draw out a plug from an earphone jack, when having sent out the acoustic signal to the earphone the loudspeaker of the request selected to arbitration -- and -- or it can switch to an earphone, an acoustic

signal can be sent out, and the user-friendliness of a pocket mold wireless terminal can be improved in this way.

[0127] Moreover, the body microphone which collects a user's voice to a message and the earphone jack in which the plug connected to the external microphone which collects a user's voice similarly is inserted possible [extraction and insertion], A signal taking-in means to incorporate the transmitting sound signal which collects a user's voice with a body microphone and is acquired, or to incorporate the transmitting sound signal which collects a user's voice by the earphone and is acquired, the time of the plug being inserted in the earphone jack -- the body microphone of arbitration -- and -- or by having established the control means which controls a signal taking-in means to incorporate the transmitting sound signal which collects a user's voice with an external microphone and is acquired Even if it does not draw out a plug from an earphone jack, a user's voice can be collected to a message through a body microphone, and the user-friendliness of a pocket mold wireless terminal can be improved in this way.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention is applied to the a digital cellular phone terminal which has the regenerative function of music data, concerning the sound taking-in approach, and is suitable for a pocket mold wireless terminal and the sound sending-out approach list.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] When recording music on internal memory as digital data and not telephoning it at a going-out place etc. as a digital cellular phone terminal recently, there are some which were made as [enjoy / music data are reproduced from memory as a music regenerative apparatus of a pocket mold, and / music].

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] The loudspeaker which carries out sound emission of the sound based on a predetermined acoustic signal as mentioned above according to this invention, The earphone jack in which the plug connected to the earphone which carries out sound emission of the sound based on the acoustic signal concerned is inserted possible [extraction and insertion], A signal sending-out means to send out an acoustic signal to a loudspeaker or to send out an acoustic signal to an earphone through a plug from an earphone jack, a loudspeaker -- and -- or the loudspeaker specified when having sent out the acoustic signal of arbitration to the earphone -- and -- or by having established the control means which controls a signal sending-out means to send out the acoustic signal or other acoustic signals of arbitration to an earphone to the timing of arbitration a loudspeaker -- and -- or, even if it does not draw out a plug from an earphone jack, when having sent out the acoustic signal to the earphone the loudspeaker of the request selected to arbitration -- and -- or it can switch to an earphone, an acoustic signal can be sent out, and the user-friendliness of a pocket mold wireless terminal can be improved in this way.

[0127] Moreover, the body microphone which collects a user's voice to a message and the earphone jack in which the plug connected to the external microphone which collects a user's voice similarly is inserted possible [extraction and insertion], A signal taking-in means to incorporate the transmitting sound signal which collects a user's voice with a body microphone and is acquired, or to incorporate the transmitting sound signal which collects a user's voice by the earphone and is acquired, the time of the plug being inserted in the earphone jack -- the body microphone of arbitration -- and -- or by having established the control means which controls a signal taking-in means to incorporate the transmitting sound signal which collects a user's voice with an external microphone and is acquired Even if it does not draw out a plug from an earphone jack, a user's voice can be collected to a message through a body microphone, and the user-friendliness of a pocket mold wireless terminal can be improved in this way.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, the sound emission of the music based on the music signal from the earphone concerned by reproducing the music data from memory in the condition were inserted in the earphone jack by which the plug which an earphone is used in the a digital cellular phone terminal of this configuration at the time of playback of music data, and is connected to the earphone concerned was prepared in the a digital cellular phone terminal, changing the played music data concerned into the music signal of an analog, and sending out to an earphone through an earphone jack to a plug carries out.

[0004] Moreover, if a a digital cellular phone terminal has arrival of the mail during playback of music data, it will report that carried out sound emission of the ringer tone with music from the earphone, and the user had arrival of the mail by superimposing the signal for ringer tones on the music signal according to the music data concerned, and sending out to an earphone.

[0005] Thereby, the a digital cellular phone terminal is made as [make / the arrival is reported to a user and / it / to telephone to a partner], even if arrival of the mail is during playback of music data.

[0006] However, in this digital cellular phone terminal, the earphone jack is a mechanical change-over switch, if the plug of an earphone is inserted in the earphone jack concerned, it will replace with the loudspeaker prepared in the a digital cellular phone terminal, and only the earphone will be operated compulsorily.

[0007] For this reason, as the a digital cellular phone terminal was listening to music using the earphone, when it had arrival of the mail, in order that it might make a user telephone to a partner, it had to draw out the plug of an earphone from the earphone jack, had to operate the loudspeaker, and had a user-unfriendly problem.

[0008] This invention was made in consideration of the above point, and tends to propose the sound taking-in approach in the pocket mold wireless terminal and the sound sending-out approach list which may improve user-friendliness.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the approximate line-perspective view showing the gestalt of 1 implementation of the appearance configuration of the a digital cellular phone terminal by this invention.

[Drawing 2] It is the approximate line-perspective view showing the configuration of the rear face of the body of a a digital cellular phone terminal.

[Drawing 3] It is the approximate line-perspective view showing the configuration of a head set.

[Drawing 4] It is the block diagram showing the circuitry of a a digital cellular phone terminal.

[Drawing 5] It is the flow chart which shows the change-over procedure of I/O of a sound signal.

[Description of Notations]

1 a a digital cellular phone terminal and 2 .. a display and 3 .. a body and 5 .. an antenna and 6 .. a loudspeaker and 10 .. a body microphone and 16 .. an earphone jack and 20 .. a head set and 21 .. a plug and 25 .. an earphone and 29 .. an external microphone and 30 .. a change-over carbon button and 40 -- .. -- the main control section and 47 -- .. -- the record playback section and 49 -- .. -- a voice codec and 51 -- .. -- the transceiver circuit section and RT1 -- .. -- change-over procedure.

[Translation done.]

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DRAWINGS

[Drawing 1]

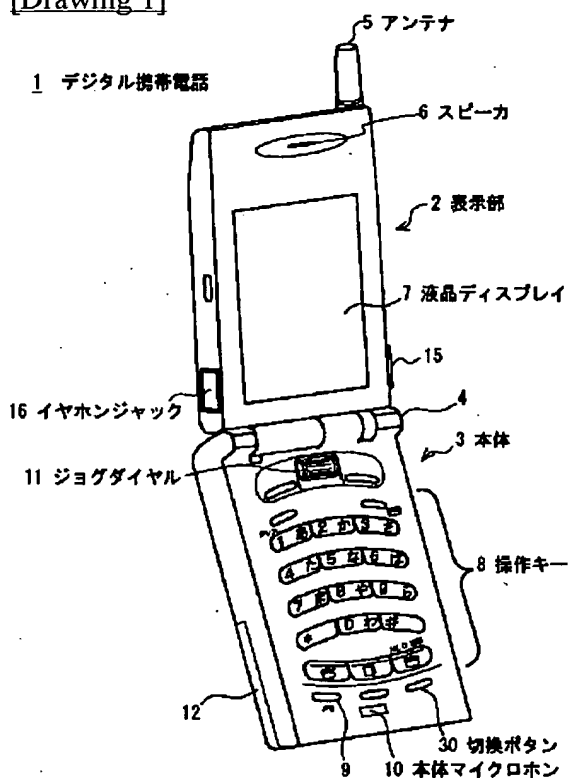


図1 本発明によるデジタル携帯電話機の外観構成

[Drawing 2]

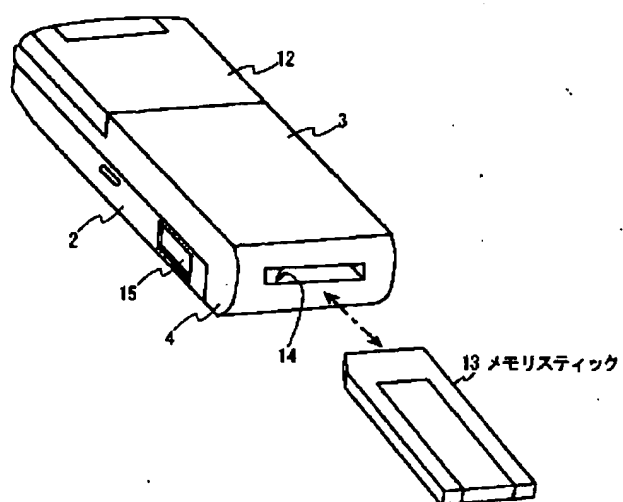


図2 本体の裏面の構成

[Drawing 3]

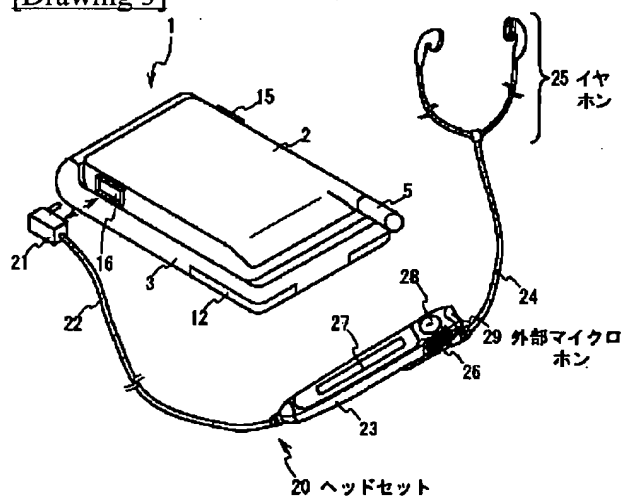


図3 ヘッドセットの構成

[Drawing 4]

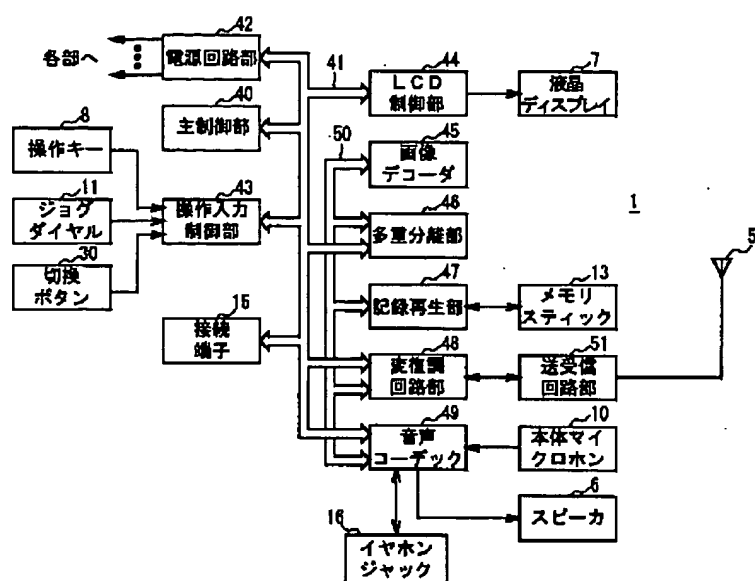


図4 デジタル携帯電話機の回路構成

[Drawing 5]

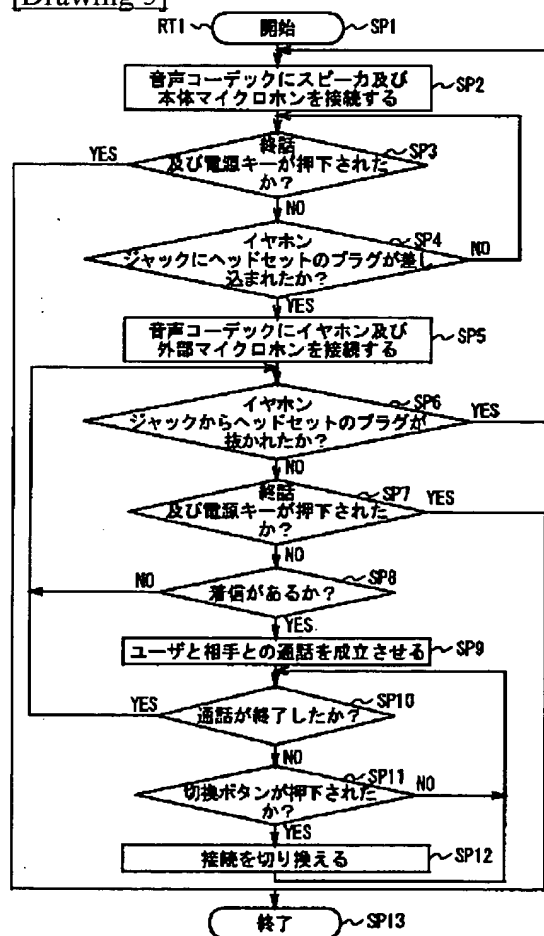


図5 切換処理手順

[Translation done.]